

THE MINERAL INDUSTRY OF

HUNGARY

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Bauxite was the only major nonfuel mineral produced in Hungary that was significant in terms of European mineral production. In 1995, Hungary continued to produce modest amounts of fossil fuels, industrial minerals, and metals. However, the country's production of primary aluminum had almost ceased, owing to Hungary's energy shortages. Coal, natural gas, and petroleum also were produced, but in amounts sufficient to satisfy only about one-half of the country's annual energy needs. Hungary's transition from central economic planning to a market-based economic system continued to require corresponding structural changes in the economy. Among the major changes in this transition process was the gradual severance of state subsidies to industries and other commercial enterprises. Hungary's minerals industries increasingly had to rely on markets for continued operations and also have rising levels of unemployment, declines of production, and possible bankruptcy.

In 1995, Hungary's real GDP was expected to increase by about 2% compared with that of 1994.¹⁰ In 1994, the GDP of Hungary grew by more than 2%, following several years of economic dislocation resulting from structural economic changes and the reorientation of country's foreign trade. The chief events in the Hungary's minerals industries in 1995 included further gold exploration work at Recsk, the announced closure of the Mecsek uranium mine, and the renewal of the Hungarian-Russian alumina for aluminum agreement.

The Government of Hungary remained committed to the process of restructuring and denationalizing its state-owned industrial assets. By 1995, about 60% of Hungary's GDP was composed of private sector activity. Moreover, the Government planned to accelerate the privatization of the country's state-owned enterprises. According to the new law on privatization, the Government planned to decouple all branches of the mineral industry from state control including those of strategic importance to the country, such as the Hungarian Oil and Gas Co. (MOL) and the Mecsek Ore Mining Co., Hungary's uranium ore mining and processing firm.² The Hungarian Government's Decree No. 132/1993, constituted the country's latest Mining Law (section 50. of Act XLVIII, 1993), which, among many functions, established the legislative basis for the "estimation of national mineral reserves, (the) determination of environmental and other risks of exploitation; (provision of)

geological and geophysical data supply and recommendation for mineral exploration, aimed at the selection of areas suitable for concession; (the) supply of geological data packages for concession tenders; (and the) provision of other geological, hydrogeologic, geotechnical, environmental, and mining information to outline tender conditions."

The overall neglect of the environment by Hungary's former Government from 1948 to 1989 resulted in considerable degradation of the country's air, and, in some cases, ground and surface waters from industrial point sources, such as chemical plants, mines, steel mills, and refineries. The use of high-sulfur brown coals and lignites at the country's thermal electric power stations heavily contributed to high concentrations of sulfur dioxide, nitrous oxide, and suspended solid particulates. The draft of the new environmental protection law, titled, "The Basic Laws on the Environment," reportedly was to establish regulations on environmental protection, conservation, and regional development. Government agencies that have been responsible for enforcing existing regulations concerning environmental protection included the Ministry of the Environment and Regional Planning (KTM) and the Hungarian Mining Office (MBH). KTM was authorized to help only in the enforcement of existing environmental protection legislation prescribed by other ministries of the Government. With respect to mining and minerals, Hungary's Ministry of Industry and Commerce had the primary responsibility for establishing environmental regulatory standards. The chief responsibility of MBH was that of a certifying agency. Reportedly, MBH could review only technical developmental and operational plans, which had to include provisions concerning environmental protection and land restoration by responsible entities, and oversee their compliance.

Hungary's generally declining trend in minerals output after 1989 largely was the result of structural adjustments during the emergence of a market-based economic system. From 1993 to 1995, the country's commodity production trends have been showing a growing correspondence to market demand as opposed to industrial output during the period of central economic planning, when production targets were set without reference to costs, efficiency, and other economic variables. (*See table 1.*) Consequently, stabilization of output of most minerals became evident in 1993-95. Similarly, Hungary's mineral resources are being

evaluated and reexamined with reference to market criteria. Reserves, as defined by most market economies, are those mineral deposits that can be mined at a profit under existing conditions with existing technology. In CMEA countries, including Hungary, the previous policies for centrally planned industrial development often had more to do with political rather than economic considerations. The chief principle of industrial development was to attain self-sufficiency at all costs. Centrally planned directives to discover exploitable resources may have resulted in possible over evaluations of collected field data. Consequently, it could take Hungary a number of years to determine its real mineral reserves from the standpoint of a market economy. The information provided in table 2 lists the names of administrative bodies as well as subordinate production units of the main branches of the country's mineral industry. (*See table 2.*)

The republics of the former Soviet Union (FSU) remained Hungary's major mineral trading partners.

In 1993, for which more complete trade returns were available, the FSU continued to supply Hungary with almost 100% of its import needs of natural gas and petroleum. Additionally, in 1993, of Hungary's imports of coal (all grades), iron ore, pig iron, ferromanganese, and ferrosilicon from the FSU amounted to 33%, 92%, 37%, 49%, and 58% of total imports of these commodities, respectively. However, the overall volume (and value) of the country's foreign trade had shifted from its former centrally planned economy partners of the CMEA to the industrial countries of Western Europe.³

The most important event concerning Hungary's bauxite, alumina, and aluminum industries in 1995 was the renewal of a long-standing alumina for aluminum agreement between Hungary and Russia. When the CMEA was a viable entity, this was a long-term agreement between Hungary and the Soviet Union and was the basis for Hungary's bauxite mining and alumina refining operations. Following the dissolution of the CMEA, the transactions between Hungary and the Soviet Union and later Russia were conducted on a spot market basis, which resulted in greatly reduced procurement offerings to Hungary. Because of this, and also because of the uneconomic position of Hungary's domestic ore, compared with bauxite available on the world market, a significant rationalization process had occurred in the industry. In 1994, the alumina wet section at the Almasfuzito alumina refinery was reported closed. The final decision to close the facility was made following the loss of a tender to provide alumina to the new alumina smelter at Ziar nad Hronom in nearby Slovakia. The closure represented a decrease in the country's alumina refining capacity by 300,000 t/yr.⁴ Moreover, the Csabpuszta bauxite mine, which has provided Almasfuzito with feedstock, was to close in mid-1995, leaving Hungary with four operating bauxite mines.

In June, an agreement was concluded between Hungary

and Russia that was to provide Russia with about 100,000 t of alumina in 1996 on the basis of terms that were not disclosed at the time.⁵ Compared with that of 1995, the agreement would increase Hungary's alumina shipments to Russia by about 40,000 mt.⁶ Reportedly, Russia indicated that it may consider negotiating a longer-term supply arrangement to the year 2000 to lock in favorable prices.⁷ Under the current contract, smelter grade alumina to be shipped to Russia would be produced at the Ajka refinery. However, should Russia increase its alumina purchases through the year 2000, Hungary could reopen the Almasfuzito alumina refinery. In late 1994, Hungary decided to retain the Inota aluminum smelter, which has been operating at about its full capacity of 30,000 t/yr.⁸ In late 1995, Hungary decided to privatize Magyarovar Alumina and Alundum Ltd. (MOTIM), its refractory grade alumina and refractories manufacturer. About 90% of MOTIM's stock was to be offered for bidding and 10% to MOTIM's employees.⁹ Located at Masonmagyarovar, MOTIM produces about 75,000 t/yr of calcined alumina, using the Bayer process. Production capacities at MOTIM are 30,000 t/yr for fused alumina; 7,000 t/yr for fused cast alumina (refractories and abrasives); 10,000 t/yr for fused mullite (glass and steel industry); 1,000 t/yr for fused magnesium-alumina spinel (refractory bricks and monolithics). Additionally, MOTIM's chemical division produces hydrated alumina that is consumed by the company's 60,000-t/yr aluminum sulfate plant.

Hungary continued to maintain facilities at the Reck copper deposit, despite failure in recent years to find sufficient capital to develop the site. Mining at Reck began in 1926 when mineralization relatively close to the surface was exploited to produce copper and gold. Mining ceased in 1979, following the depletion of reserves of ore. Subsequent geologic investigations at Reck have revealed very large, deep-lying copper and polymetallic mineralization in a 10-square-kilometer area. Mineral resources at Reck were determined at about 175 Mt of copper ore, grading about 1.1% copper, and 20 Mt of polymetallic ore, grading about 4.2% lead and 0.9% zinc, together with smaller quantities of gold, molybdenum, and silver.

Apart from care and maintenance operations at Reck, in late 1994, a reexploration and reevaluation of the copper-gold ore body at Reck, near the old Lahoca Mine was undertaken by a joint venture of the same name consisting of Rhodes Mining of Australia and the Hungarian state property agency, AV Rt. The operations at the Lahoca project reportedly were managed by Enargit Kft., which was owned by Rhodes Mining and AV Rt., owning 81.6% and 18.4% of the shares, respectively.¹⁰ The Lahoca mine was operational from 1850 to 1979, producing copper and gold with ore grading 3 g/t. Reportedly, the work conducted in 1994 included the drilling of 37 surface drill holes at 100-m spacings. At a cut off grade of 1 g/t of ore, the deposit was determined to contain about 26,784 kilograms of gold.¹¹ In

early 1995, AV Rt. sold its minority stake in Enargit Kft. to Rhodes Mining.¹² Additionally, an agreement was concluded between two wholly owned subsidiaries of Rhodes (Enargit Kft. and Swan Resources Ltd.) and Billiton Development BV of the Netherlands, which allowed Billiton the option to acquire up to 50% of the Lahoca gold mining project. At yearend, it was reported that Rhodes Mining had hired the Canadian mining company, CAMECO, to conduct an engineering study on the best method to mine the deposit.¹³

Among the chief events in the iron and steel sector was the renationalization of the Dimag-Diosgyoer Stock Corp., reportedly effective in February. The company reportedly will continue to operate under the name Diosgyoer Steel Plant Ltd. The continued operation of this enterprise would maintain employment for about 3,000 workers and have the capacity to produce about 550,000 t/yr of crude steel.¹⁴

Most industrial minerals in Hungary, apart from cement, were produced under the auspices of the Hungarian Ore and Mineral Co., a partially denationalized state-owned enterprise. Major industrial minerals mined in Hungary included bentonite, diatomite, dolomite, kaolin, manganese (nonmetallurgical), perlite, silica sand, and zeolite. The production of these commodities satisfied both the country's domestic and export requirements. Hungary's export trade in industrial minerals was handled by Mineralimpex (Hungarian Trading Co. for Oils and Mining Products) with offices in Austria, Germany, and Switzerland.

Hungary's industrial minerals sector also had the most success with respect to restructuring and attracting foreign investment capital. By yearend 1994, a substantial portion of the country's cement industry was capitalized through foreign investment, largely from Germany and Switzerland. Reportedly, each plant in Hungary's cement industry has been able to acquire foreign investment during the 1990's. Domestic capacity was reported to be about 5.25 Mt/yr; the capacity of clinker was 4.4 Mt/yr.¹⁵ Heidelberger and Schwenk of Germany owned 90% of the Dunai Cement factory and, respectively, 34% and 16% of the stock of the Beremend and Belapatfalva cement plants. Holderbank of Switzerland acquired a 50%, 33%, and 16% share of the stock of Labatlan, Hejoscaba, and Belapatfalva cement plants, respectively. In recent year, most production of cement was destined for domestic markets, and a small amount was exported (116,000 mt in 1994) with exports to Romania, Slovakia, and Ukraine composing about 85% of total exports.¹⁶

In early 1995, the Government of Hungary decided to close the Mecsek uranium mine by 1997, following 7 years of

financial losses at this facility. Uranium needed for the country's Paks nuclear power plant was to be imported.¹⁷ Other developments in the mineral fuels sector in 1995 involved the final stages of negotiation of contracts by the Government of Hungary with private oil companies to conduct exploration in Hungary.¹⁸

The country's pipeline network consisted of a 1,204-km line to carry crude oil, a 600-km line for refinery products, and a 3,800-km pipeline for natural gas. In 1992, mineral fuels carried by the country's pipelines constituted 80.8% of total carriage by pipeline.

The total net installed electric generating capacity as of 1990 amounted to 6,891 megawatts (MW), of which 4,946 MW was rated by thermal electric generating plants, 1,695 MW by nuclear powerplants, 48 MW by hydroelectric power facilities, and 202 MW by.

Given the Hungarian Government's objective to bring the country into conformity with standards that are current within European Free Trade Union and the EU, greater investment can be envisaged for the reconstruction and modernization of the country's infrastructure: transportation networks, commercial buildings, and private and publicly owned dwellings, etc. To accommodate most of these objectives, the country's industrial minerals and construction materials sectors would increase in importance as the demand for cement, quarry products, and other industrial minerals increases.

¹²Economic Trends and Outlook for Hungary. U.S. Dept. of Commerce, 1995.
¹³FBIS-EEU-94-111-S. June 9, 1995, pp. 1-35; from Magyar Kozlony, May 17, 1995, No. 38, pp. 1792-1811, and Government of the Hungarian Republic Nov. 11, 1994, pp. 3-25.

³Kulkereskedelmi Statisztikai Evkonyv (Statistical Yearbook of External Trade, 1993), (Budapest). 1994, pp. 81-129.

⁴Mining Journal (London). Nov. 4, 1994, p. 322.

⁵_____. June 9, 1995, p. 422.

⁶American Metal Market. June 7, 1995, p. 16.

⁷Mining Journal (London). June 9, 1995, p. 422.

⁸_____. Dec. 9, 1994, p. 422.

⁹Industrial Minerals. Nov. 1995, p. 24.

¹⁰Mining Magazine (London). Oct. 1994, p. 231.

¹¹_____. July, 1995, p. 50.

¹²American Metal Market. Jan. 12, 1995, p. 2.

¹³FBIS-EEU-95-242-S. Dec. 18, 1995, p. 8; from MTI (Budapest) 1918 GMT, Dec. 13, 1995.

¹⁴SWB EEW/0369. Feb. 2, 1995, p. WA/3; from Hungarian radio 1700 gmt, Jan. 27, 1995.

¹⁵International Cement Review. Jan. 1994, p. 15.

¹⁶_____. May 1995, p. 47.

¹⁷Mining Journal. Jan. 13, 1995, p. 27.

¹⁸Journal of Commerce. July 20, 1995, p. 3B.

TABLE 1
HUNGARY: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1991	1992	1993	1994	1995 e/
METALS					
Aluminum:					
Bauxite, gross weight thousand tons	2,040	1,720	1,560	830	1,100
Alumina, gross weight, calcined basis do.	653	548 r/	421	177 r/	230
Metal:					
Primary	63,300	26,865 r/	27,879 r/	30,740 r/	25,000
Secondary e/	32,000	20,000	25,000	3,000	4,000
Total e/	95,300 r/	46,865 r/	52,879 r/	33,740 r/	29,000
Copper, metal: e/					
Smelter, secondary	100	100	100	100	100
Refined including secondary	12,000	12,000	11,000	11,000	11,000
Gallium, metal e/ kilograms	3,600	3,500	2,500	-- 3/	--
Iron and steel, metal:					
Pig iron:					
For steel industry thousand tons	1,310	1,176 r/	1,407 r/	1,590	1,600
For foundry use do.	4	--	--	--	--
Total do.	1,314 r/	1,176 r/	1,407 r/	1,590	1,600
Ferroalloys e/ 4/	8,500	8,500	8,500	8,000	8,000
Steel:					
Crude thousand tons	1,930	1,559 r/	1,752 r/	1,945 r/	1,850
Semimanufactures, rolled only do.	1,540	1,670	1,835 r/	2,073 r/	2,000
Manganese ore:					
Run of mine:					
Gross weight	54,800	32,000	38,000	40,000	40,000
Mn content e/	10,000	5,800	6,800	7,200	7,200
Concentrate:					
Gross weight	30,000	18,000	59,000	25,000	25,000
Mn content e/	9,300	5,400	17,500	7,500	7,500
Vanadium, metal e/	200	200	200	200	200
Zinc, metal, smelter, secondary e/	1,200	1,000	1,000	-- 3/	--
INDUSTRIAL MINERALS					
Cement, hydraulic thousand tons	2,530	2,240	2,530	2,810	3,000
Clays:					
Bentonite:					
Raw	18,100	23,000	9,404 r/	14,700	15,000
Processed	14,100	15,000	8,000 r/ e/	12,000	12,000
Kaolin, raw and washed	19,000	7,000	15,000	15,000	15,000
Gypsum and anhydrite e/	110,000	50,000	22,000 3/	25,000	25,000
Lime, calcined thousand tons	571	507	476	464	480
Nitrogen, N content of ammonia do.	261	152	237	250	250
Perlite	87,800	83,000	80,000	85,000	85,000
Refractory materials, n.e.s.:					
Chamotte products thousand tons	28	19	20	20	20
Chrome magnesite products do.	9	41	3	5	5
Sand and gravel:					
Gravel thousand cubic meters	2,970	3,790	3,170	3,000	300
Sand:					
Common e/ do.	200	200	200	200	200
Foundry do.	181	184	15	12	15
Glass do.	600	660	260	308	300
Sodium compounds:					
Hydroxide (caustic soda)	170,000	139,000	130,000	132,000	155,000
Sulfate e/	6,000	6,000	6,000	6,000	5,000
Stone:					
Dimension, all types thousand tons	3,350	3,650	4,030	4,000	4,000
Dolomite do.	454	298	644	600	600
Limestone do.	4,330	3,700 r/	3,920 r/	4,000	4,000
Quartzite do.	1 r/	-- r/	-- r/	--	--
Sulfur: e/					
From pyrite	900	900	800	800	800
Byproduct, elemental, all sources	8,000	8,000	8,000	8,000	8,000
Total	8,900	8,900	8,800	8,800	8,800
Sulfuric acid	134,000	94,900	71,300	83,700	100,000
Talc e/	10,000	10,000	10,000	10,000	10,000

See footnotes at end of table.

TABLE 1--Continued
HUNGARY: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1991	1992	1993	1994	1995 e/	
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand tons	1,700	1,274	942	1,024	1,000
Brown	do.	9,950	7,630	6,600	5,710	6,500
Lignite	do.	5,330	7,020	5,050	6,760	7,000
Total	do.	16,980	15,924 r/	12,592	13,494 r/	14,500
Coke, metallurgical		611	719	643	650	650
Fuel briquets	thousand tons	1,920	682	605	410	400
Gas, natural, marketed	million cubic meters	5,040	5,060	5,010	5,900	5,300
Peat, agricultural use e/	thousand tons	65	65	65	65	65
Petroleum:						
Crude:						
As reported	do.	1,890	1,830	1,710	1,600	1,650
Converted	thousand 42-gallon barrels	12,700	12,200	11,400	10,700	10,800
Refinery products 5/	do.	45,700	45,700	41,200	41,000	41,000

e/ Estimated. r/ Revised.

1/ Table includes data available through Apr.. 1996.

2/ In addition to the commodities listed, diatomite and a variety of other crude construction materials such as common clays are produced, but available information is inadequate to make reliable estimates of output levels.

3/ Reported figure.

4/ Hungary is believed to produce some blast furnace ferromanganese.

5/ Excludes refinery fuel and losses.

TABLE 2
HUNGARY: STRUCTURE OF THE MINERAL INDUSTRY FOR 1995

(Thousand of metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity	
Alumina	HUNGALU (Hungarian Aluminum Corp.)	Ajka Timfoldgyar plant, about 120 kilometers southwest of Budapest, near Lake Balaton	450	
Do.	do.	Almasfuzito Timfoldgyar plant near the Czech Republic border, 63 kilometers northwest of Budapest	350	
Do.	do.	Moson-Magyarovar plant, in northwest corner of Hungary, about 12 kilometers from Austrian and Czechoslovak border	75	
Aluminum, primary	do.	Inota plant, near Varpalota, 75 kilometers southwest of Budapest	46	
Bauxite	HUNGALU: Bakony Mining Enterprise	Bakony District, extending roughly 100 kilometers northeast along Lake Balaton	1,500	
Do.	Fejer County Mining Enterprise	Fejer County, Vertes District, about 60 kilometers south of Budapest	1,060	
Cement	Cement es Meszmuvek	Belapatfalva, near Miskolc, 125 kilometers northeast of Budapest	1,200	
Do.	do.	Beremend, 45 kilometers south of Pecs	1,100	
Do.	do.	Hejocsaba, 150 kilometers northeast of Budapest	1,600	
Do.	do.	Labatlan, 20 kilometers north of Tatabanya	500	
Do.	do.	Selyp, 50 kilometers north of Budapest	60	
Do.	do.	Tatabanya, 80 kilometers west of Budapest	500	
Do.	do.	Vac, 50 kilometers north of Budapest	1,200	
Coal:				
Bituminous and lignite	Magyar Szenbanyaszati Troszt (MSZT) (Hungarian Coal Mining Trust)	Tatabanya and Oroszlany coal mining region, 45 kilometers west of Budapest	8,900	
Do.	do.	Mecsek coal mining region, near Pecs and Komlo, north of the Yugoslav border	3,100	
Do.	do.	Borsod coal mining region, 130 kilometers northeast of Budapest	5,200	
Lignite	do.	Thorez opencast mine at Visonta, 80 kilometers northeast of Budapest	7,000	
Manganese	Orszagos Erc-es Asvanybanyak (National Ore & Mineral Mines)	Urkut manganese ore mines, 120 kilometers southwest of Budapest	160	
Natural gas	million cubic feet	Hungarian Oil and Gas Co. (MOL)	Szeged and Algyo gasfields, southern Hungary	152,000
Do.	do.	do.	Hajduszoboszo gasfields, 180 kilometers east of Budapest	50,000
Do.	do.	do.	Smaller gasfields: Szank, Kardoskut, Bekes, Berefurdo, and others	39,000
Petroleum:				
Crude	million barrels	do.	Szeged-Algyo field, near Romanian-Yugoslav border; 50% of total capacity	7
Refined:		Subsidiaries of MOL:		
Do.	do.	Danube Petroleum Refining Co.	Szazhalombatta	55
Do.	do.	Tisza Petroleum Refining Co.	Leninavaros	22
Do.	do.	Zala Petroleum Refining Co.	Zalaegerszeg	4
Steel		Dunai Vasmu (Danube Steel Works)	60 kilometers south of Budapest	1,400
Do.		Ostag - Ozdi Acelmu Rt	120 kilometers northeast of Budapest	700
Do.		Dimag - Diosgyoer Stock Corp.	Diosgyoer, 145 kilometers northeast of Budapest	954
Do.		Cepel Iron and Steel Works	Budapest	171